



COLLEGE
OF THE
VIRGIN ISLANDS

Cooperative Extension Service

GARDENERS FACTSHEET NO. 6

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HOW TO PREPARE YOUR OWN COMPOST

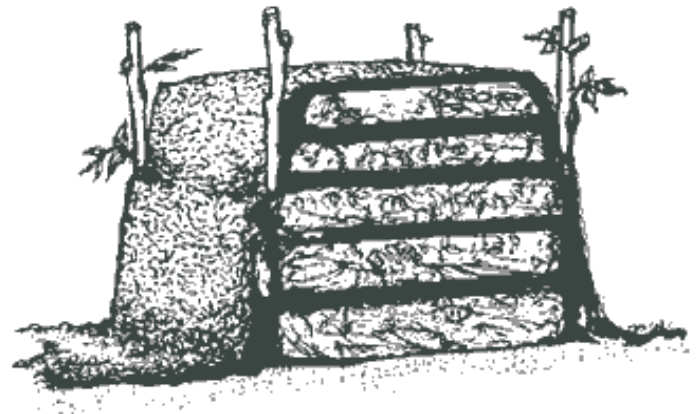
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Plant materials, animal manures and soil microorganisms are combined in a pile to create valuable compost. Compost is partially decomposed organic material which, when added to the garden, improves both the physical structure and fertility of the soil. Annual additions of compost and other organic materials will provide benefits that may not be immediately apparent but improve the soil over time.

As partially decayed organic matter continues to decompose in the soil, fine soil particles are collected together into larger crumb-like masses. These larger particles will not pack as close together as smaller particles. This action will improve drainage and aeration and will "lighten" heavy clay soils.

Sandy, well-drained soils made up of primarily large size soil particles are likely to dry out rapidly and cause plants to wilt. Additions of organic matter such as compost will increase the ability of sandy soils to retain moisture and nutrients.

As compost decomposes in the soil, plant nutrients are slowly released to the plant. Although this will not supply all the nutrients required for optimum growth, it will help supply most of the plant nutrients required in small amounts (trace elements). Nutrients required in large amounts, such as nitrogen, phosphorus and potassium, should be supplied in a concentrated form, such as 10-10-10 fertilizer for maximum yields. However, the gardener who is not concerned with maximum production can supply adequate nutrition using only manure and compost. Annual applications of 4 bushels of manure per 100 sq. ft. plus generous amounts of compost will produce adequate yields.



THE PILE

All plant and animal material will eventually decay if it is exposed to warm, moist conditions. The compost pile provides those conditions so that the microorganisms can rapidly decompose organic materials.

BUILDING THE PILE

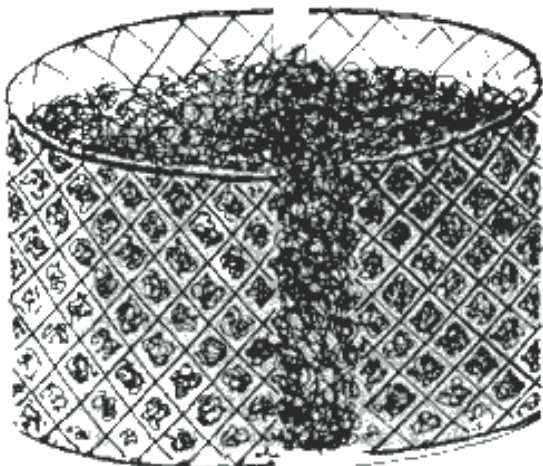
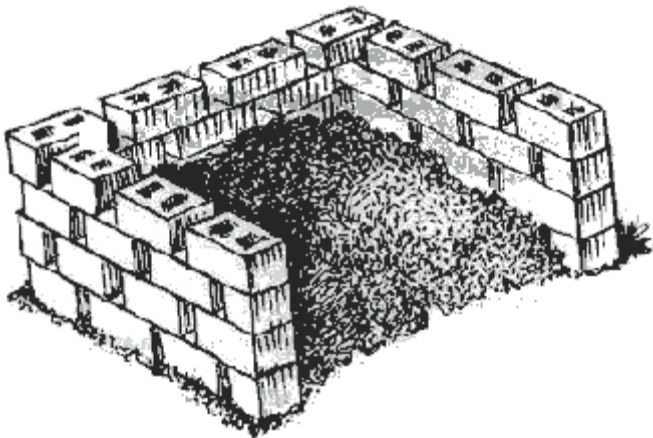
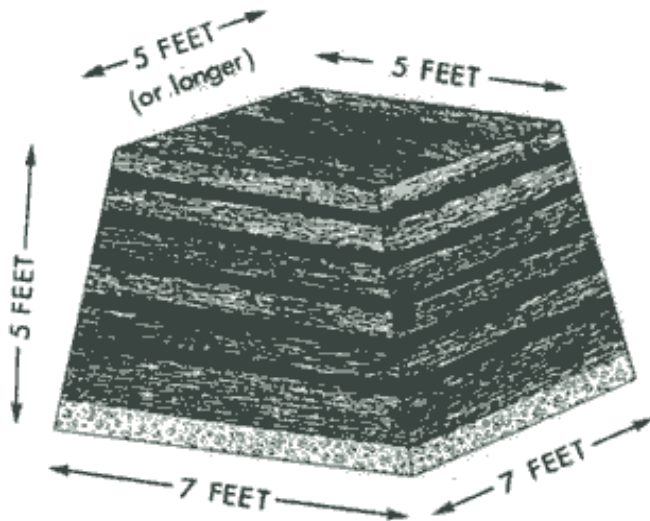
A compost built of primarily dry material such as brown grasses and palm fronds will decompose very slowly due to a lack of nitrogen and water. The addition of moist, green matter helps supply both nitrogen and moisture necessary for microorganisms to live.

A compost built of primarily fresh, green materials, such as grass and kitchen wastes, will decompose very rapidly. However, green material lacks bulk. The pile will shrink in size as water is lost, leaving a small volume of material.

Successive layers of moist or green organic materials should be alternated with dry, brown material. Each layer

should be no more than 8 inches deep to allow proper mixing. Approximately equal proportions of moist and dry materials would be ideal, however, a 2:1 ratio of dry to moist material is acceptable.

The pile should be at least 4 ft. long by 4 ft. wide and 4 ft. high. A smaller pile will dry out too fast. The optimum size for your compost pile is 7 ft. long by 7 ft. wide at the bottom and 5 ft. high. This pile will retain the moisture and heat necessary for decomposition. If it gets much larger, air will not get to the center of the pile. A compost that lacks air will emit odors similar to rotting garbage.



The pile can be enclosed in a wire cage or a cinder block bin for convenience. Wooden enclosures decompose too rapidly for use in the tropics.

THE INGREDIENTS

Most organic refuse, such as weeds, old plants, fallen leaves, kitchen wastes and grass clippings, can be saved for composting. Diseased plant materials should be burned and the ashes may be included in the compost. Scraps of meat and animal bones should not be included because they will attract rodents. Vegetable wastes from the kitchen can be put in the pile if they are buried. Sewage sludge is not recommended because it may contain toxic heavy metals such as cadmium and lead.

Coarse materials, such as tree branches, twigs and palm leaves, will take too long to decompose when added to the compost. Although a small amount of these materials will help aerate the pile, too much can increase the rate of drying and slow down decomposition.

A partial list of acceptable materials includes:

- | | |
|-------------------------------|-----|
| green vegetation | (m) |
| dry vegetation | (d) |
| animal manures | (m) |
| sawdust (from untreated wood) | (d) |
| rotted fruits and vegetables | (m) |
| coffee grounds | (m) |
| eggshells | (d) |
| wood ashes | (d) |

(m) = moist material

(d) = dry material

SHREDDING THE MATERIALS

Chopping the materials into smaller pieces is not necessary, however, it will greatly increase the rate of decomposition. This is especially true for the coarse, dry ingredients. Grasses can be chopped up with a lawn mower but more fibrous materials should be put through a chopper-shredder. Large leaves, such as banana, can be cut into smaller pieces with a machete.

TURNING THE PILE

A pile that is built in layers as described above should be turned about 4 weeks after building. It should be turned

a second time 3-4 months later.

For most gardeners it is difficult to obtain all the materials at one time. Therefore, most piles are built as materials become available. This type of pile must be turned more often. Whenever you have a lot of material to add, turn the pile and mix in the new material.

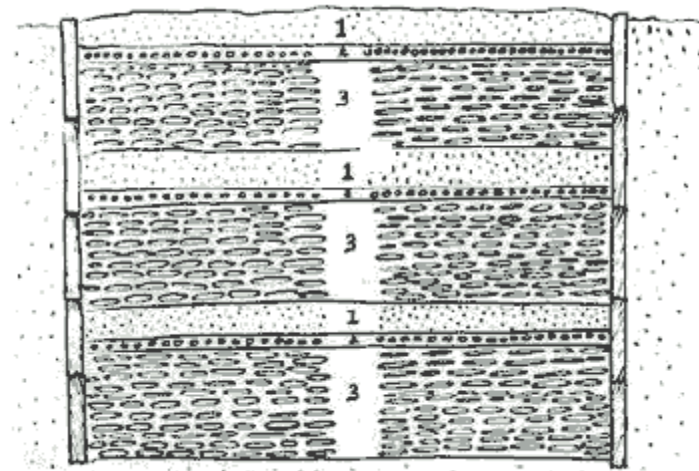
It may be convenient to turn compost contained in one enclosure into another. Two cinder block bins side by side make turning easier and also make a well-shaped, neat pile.

COVERING THE PILE

All above ground compost piles in the Virgin Islands must be moistened and covered. The tropical sun and drying winds will dehydrate a pile before decomposition can begin. A black plastic cover will help retain moisture and also increase the heating of the pile. A plastic cover will also protect the pile from heavy rains which may wash away valuable nutrients.

THE PIT COMPOST

Another means of keeping the pile moist is to build it under ground. Dig a hole about 4 ft. deep and 4-6 ft. wide. Mix the ingredients as described for the above ground compost and moisten the materials. The pit should then be



1. Soil
2. Fertilizer (1 cup/layer)
3. Leaves, manure, etc.

covered with several inches of soil. This compost will work without air, however it will smell like rotting garbage and may also attract more rodents and cockroaches than the above ground pile. The addition of ammonium sulfate (21-0-0) or 10-10-10 fertilizer will increase the rate of

composting and possibly reduce the odor and rodent problem.

REQUIREMENTS FOR A GOOD COMPOST

1. Microorganisms, such as bacteria and fungi (molds) are needed to decompose the organic materials. These microorganisms “eat” organic matter and produce humus. The microorganisms that decompose organic materials in the Virgin Islands are found in our soils.

2. The microorganisms require a food source to live and grow. The food is the compost itself, the dried grasses, the manure, the eggshells, etc. The bulk of the food is made of dry materials which are used by the microorganisms for energy. The rest of the food is supplied by fresh, green materials which are needed for water, nitrogen and other nutrients. The microorganisms “eat” this “food” and leave humus and other decomposition products.

3. A hospitable environment for the microorganisms to live and grow is necessary. This environment should be warm and moist, yet contain enough air for the microorganisms to breathe. The failure of most compost piles is usually due to the lack of a hospitable microbial environment. In the Virgin Islands, drying out of the pile is the biggest problem.

PROBLEMS AND SOLUTIONS

What should you do if your compost doesn't work? First check the following list of possibilities. Then, should you not find the answer to your problem, call the Cooperative Extension Service of the College of the Virgin Islands.

1. **Too wet.** This problem is not very likely in the Virgin Islands due to the hot tropical sun, yet it is a possibility. When a pile becomes waterlogged it will not decompose rapidly due to lack of air for the microorganisms.

Although decomposition without air will occur, (as in a pit compost), the pile will emit an offensive odor. A well-aerated, moist pile will not emit such odors.

A plastic cover during the rainy season will prevent over-saturation of the pile. If your pile continues to be wet, you may turn in some fibrous material such as corn stalks or dry grass. The turning action as well as the dry material will help aerate the pile.

If the pile is larger than the recommended size, the center may stay wet and lack air. A pipe with holes in it, placed vertically through the center, will help aerate the pile.

2. **Too dry.** Drying of the pile is the number one problem with composts in the islands. Many composts dry up and blow away before they can decompose. Drying can be prevented by not putting large branches and palm fronds in the pile. Including a substantial portion of fresh manure, green leaves and kitchen wastes will also help prevent drying.

All above ground composts in the islands should be moistened and covered with black plastic. This will prevent drying and encourage decomposition.

3. **Lack of nitrogen.** Nitrogen is needed by microorganisms as well as by plants. A pile made of primarily dry materials such as dead grass and sawdust may be lacking nitrogen. Without adequate nitrogen, the microorganisms will not grow and the pile will not decompose.

Nitrogen is usually supplied by fresh green organic matter. If green materials are not available, you should add nitrogen fertilizer. Approximately one-half pound of ammonium sulfate (21-0-0) or one pound of 10-10-10 fertilizer should be mixed in each bushel of compost. The pile should then be moistened and covered.

4. **Lack of microorganisms.** The bacteria and fungi that decompose organic materials exist everywhere in the islands. Failure of a pile due to lack of microorganisms would be a very rare occurrence. The addition of several shovels of garden soil will insure that the pile contains the proper organisms. Commercially prepared compost activators are not necessary.

5. **Acidity too high.** Most decomposing plant and animal materials tend to acidify the pile. Many microorganisms cannot survive acid conditions. Since many soils in the Virgin Islands are quite alkaline, the soil added to the pile should neutralize the acidity. If your soil is not alkaline, you may add lime to the pile. Approximately 3-5 pounds of lime in a 5 ft. by 5 ft. by 5 ft. pile should be adequate.

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